Proper Functioning Condition

And

Amendment 6 Assessments and Ratings

For

Templeton Allotment

Summer 2010

Prepared by: Lisa Sims, Inyo National Forest Aquatic Biologist

Vegetation Analysis by: Brianna Goehring, Rangeland Management Specialist

Assessment Team:
Lisa Sims, Team Leader
Brianna Goehring, Vegetation and Range
Nick Ettema, Soils and Watershed Function
Lesley Yen, Soils and Watershed Function

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Introduction

This document records the findings for the Amendment 6 rangeland assessment process as described under the 1982 Inyo National Forest Land and Resources Management Plan (Forest Plan). The Amendment 6 process is an assessment tool designed to describe the vegetative and watershed conditions within range allotments, and provides a process for determining grazing utilization levels based on improving or maintaining appropriate vegetation and watershed conditions on the allotments. This process uses the Key Area concept, where a "key area" is rated in lieu of rating every area on the allotment. Key areas are representative areas that attract a higher degree of use from grazing animals, either due to location, species composition, access to water or other factors. Key areas are those meadows that will reach utilization standards before other areas on the allotment, thus triggering the time for moving animals off those management units. When Key Areas are rated at levels lower than "Fully Functional", it triggers specific actions, as identified in the Amendment 6 document, which are aimed at improving the condition of the meadow or upland site.

Six categories are assessed for the Riparian Vegetation key areas, and include:

- Surface Organic Thickness
- Soil Compaction
- Rills and Gullies
- Presence of Hummocks
- Bare Ground
- Headcuts and Nickpoints

Each category is assessed by an interdisciplinary team and assigned a rating from Level 4 to Level 1 (Fully Functional to Non-Functional). Using the individual ratings for each category, an overall rating is given to each site as one of either four ratings: Fully Functional, At Risk, Degraded or Non-Functional. In order for a riparian area to be rated as Fully Functional, four of the six assessment categories must rate as a Level 4, with no ratings in the lowest two categories (Non-Functional and Degraded categories). A rating of Functioning at Risk is given if only one category is rated Degraded, two or more categories are in the Functioning at Risk or Fully Functional and no checks are recorded as Non-Functioning. This process is described in more detail within the Amendment 6 document of the Forest Plan.

The Proper Functioning Condition assessment is another process for describing the hydrologic and vegetative conditions, or functions, specifically as it relates to stream channels and associated floodplains. It does not set utilization standards, but helps inform grazing management decisions. Together these assessments give an overall view of the characteristic and conditions of the area under examination to develop an informed decision on appropriate grazing management strategies. This report will be used in conjunction with other resource evaluations, such as wildlife, rare plant, fisheries, archaeology, etc. to set a comprehensive grazing management strategy for the allotments.

The meadow descriptions used in each meadow assessment are taken from the ecological types as described in the Inyo NF document "Upper Kern Plateau Meadow System Ecological Unit Inventory, Golden Trout Wilderness and South Sierra Wilderness", by Lisa Bryant, soil scientist and Kathleen Nelson, botanist, produced in 2000. These ecological types, also referred to as Map Units (MU) are also displayed on the maps for each meadow.

Existing Vegetation Condition on the Kern Plateau

Vegetation data were rated as poor, fair, good, and excellent. For this analysis these terms are defined below and originate from the vegetation allowable use matrices in Appendix A of the Amendment 6 Forest-wide Range Utilization Standards (USFS 1995). The term **desired plants** refers to plant species which are representative of a specific vegetation type in a healthy state.

- Poor condition- the lowest ratio of desired plants to total herbaceous, or the bottom tier of the Amendment 6 matrices.
- Fair condition- the second-to-lowest ratio of desired plants to total herbaceous (fourth tier).
- Good condition- the third-to-lowest ratio of desired plants to total herbaceous (third tier).
- Excellent condition- the second highest and highest ratio of desired plants to total herbaceous (first and second tiers).

Range vegetation transects read in 2010 indicate that 29 of the 39 key areas assessed across three allotments were in excellent condition (see Table 1); these key areas had high ratios of desired-to-total herbaceous plant species. The 10 remaining key areas were in good condition but had a lower ratio of desired-to-total- herbaceous plant species. No key areas rated below good condition (or below the third tier of the Amendment 6 matrices).

Table 1. Amendment 6 vegetation ratings.

Allotment	Number of Key Areas	
	Excellent	Good
Monache	14	1
Mulkey	8	0
Templeton	11	8
Whitney	13	1

Common Watershed Conditions for the South Fork of the Kern River through Ramshaw and Templeton Meadows: The dynamic nature of streams is evident throughout these sections of meadows on the South Fork Kern River (SFKR). Stable banks with vigorous vegetation of willows and sedges are dispersed with areas of vegetative-lacking alluvial terraces, where the area of the current floodplain is expanding by migrating into the terrace areas. There is vigorous colonization of vegetation on the streambanks and the developing floodplains. The river is responding to historic downcutting by lateral movement, new floodplain development, change in vegetation type from early seral species along the banks to later seral, deep rooted and stoloniferous sedge (*Carex*) species. The 2010 spring was a high run-off event, as evidenced by deep deposits of sand and sediment on top of established new floodplains (photo, right). In some cases, the sediment was over nine inches thick, and when removed, revealed a dense establishment of Carex ground cover. In areas of steep banks with early seral species, or dominated by sagebrush, lateral movement of the stream channel occurred, removing up to a foot of lateral alluvial terrace, but leaving a deposit of sand and silts on the inside bend of the river. This dynamic shows a strong upward trend in the hydrological function of the river throughout the Ramshaw and Templeton meadows. As high banks are being removed by the outward motion of the stream thalwag, the inside bend receives a deposit of new sand, which in turn will be vegetated by adjacent stoloniferous *Carex* plants. The river is in a dynamic state at this time, and will continue the process of widening the floodplain until a functional balance is reached where the channel shape, sinuosity and gradient is in balance with the sediment load. The time after recent sand/sediment deposition is when these areas are particularly vulnerable to excessive disturbance that can disrupt the vegetation establishment process, of which the timing should be taken into consideration during management decisions.

Photo above: Digging through a recent sediment deposit along Ramshaw Meadow.

Photo left: An example of the high alluvial terrace dominated by sagebrush vegetation, which brought the PFC rating to FAR due to the lack of riparian vegetation on the terrace. However, this is part of the natural dynamic of this system as the river moves laterally into these alluvial deposits that originate from the steep, sandy uplands.

Photo at right: An example of the stream channel througout the Ramshaw and Templeton meadows that exhibits vigourous riparain vegetation, willow establishment, narrowing of the channel, but the sediment load dominiates the substreate of the stream bottom. Compared to the stratigraphy of the substrate revealed in the banks, the sandy bottom is not out of character for the potential of the area.

Individual Meadow Assessments and Discussions:

Ramshaw Meadow: TheRamshaw Meadow complex is approximately 883 acres. It contains a wide range of ecological types, Re-watered Terrace (MU 25) and Floodplain/Terrace with Willow (MU 12) are the dominant map units (MU)adjacent to the river and Alluvial Fan (MU 7) rings the meadow fringes, with Sloped Stringer Meadows (MU 4) mapped in the adjacent tributaries. There is a high degree of vegetative diversity in this meadow, with dense patches of willow throughout, although willow density is lower within the central portion. The upper end of Ramshaw Meadow also has diverse grasses, sedges and forbs, with some sagebrush and bunchgrass dominated terraces. Sagebrush is not as common in the central portion of the meadow and exhibits dense stands of late seral sedges on the floodplains. The lower meadow exhibits willow stands with diverse age classes and also has continuous stands of late seral sedge species along the streambanks. Below are the Amendment 6 and PFC ratings for the upper and lower portions of the meadow.

Upper Ramshaw at Kern Peak Stringer:

Upper Ramshaw Meadow at Kern Peak Stringer			
Meadow Type	**Vegetation Condition**	**Watershed Rating**	**PFC Rating**
Upland	Good (3rd Tier)	Fully Functional	FAR Upward trend

Amendment 6: This upland key area is located along the SFKR at the upper end of Ramshaw Meadow, at the point where it exits the narrow canyon and flows out onto the flat meadow flood-plain. Abundant riparian vegetation occurs throughout the floodplain, along with an impressive willow component. Functionally, this is the upper end of the meadow where sand and sediment would "fall out" of the active channel at moderate flooding events. This meadow was rated Fully Functional for Amendment 6 Upland Assessment.

Photo above: Typical riparian condition within the upper reach of Ramshaw Meadow. Recent deposition is evident on inside bend.

- **Organic Layer:** Organic layer Thickness was rated at Level 3 because of the amount of bare soil that was found within the sage brush dominated sandy terrace. The "A" horizon is scattered and up to a one-inch thickness where it was present. The area was dominated by very coarse sand which has low productivity, but due to the alluvial characteristics, this might be within the range of variability. However, it still does not meet the highest rating for Level 4 condition.
- **Mass Soil Movement:** As for Mass Soil Movement, rated as a 3, there were a few shallow gullies observed, but they were vegetating. There was some soil movement from the sandy terrace into the creek, but it appeared to be within the natural expected process. All other ratings received a "4", the highest rating.
- **Surface Litter and Rock**: Surface litter was present where there was vegetation and did not appear to be mobile.
- **Flow Patterns, Bare Ground, Pedestaling, Headcuts**: None of these features were observed throughout the assessment area.
- **Compaction**: Very little compaction, and there was evidence of strong rooting through the soil layers.
- **Rills/Gullies**: There were two small gullies observed, and they were vegetated near the bottom of the gullies and trapping sediment.

Vegetation: Upper Ramshaw Meadow (at Kern Peak Stringer) is a dry meadow that rated at good vegetation condition and fell in the third tier of the Sagebrush/bunchgrass matrix in Amendment 6 because of a lack of total plant species. Litter comprised about 40% of all hits, and bare soil made up about 25% of all hits. Dead or decadent *Artemisia rothrockii* accounted for much of the litter recorded. *Artemisia rothrockii* was the dominant species recorded.

Proper Functioning Condition: PFC was rated at Functioning at Risk with an Upward Trend. An analysis of the width to depth ratio for this section of stream completed after the field visit clearly identified the channel width to be within the expected range for the size of the upper watershed. This reach of the stream appeared to be stabilizing with abundant and vigorous vegetation along the streambanks with limited lateral movement, which was increasing the sinuosity throughout the reach. Lateral movement was evident in some of the high terraces, as shown in the adjacent photo. One beaver dam was observed that had recently breeched, bringing the rating down from PFC to FAR with an upward trend. However, new oxbow channels had formed and banks are well-vegetated, and the presence of the dam had increased the area of wetland vegetation. Also, there was an abundant source of sediment behind the beaver dam, which was being dispersed, and trapped, within the channel below.

Overall, this section of the stream appeared to be recovering from a recent high flow event, with some lateral migration of the channel, which would be expected during recovery process of the historic downcutting. Vegetation was stable and in an upward trend.

Photo Right: Standing on top of breeched beaver dam. Vegetation was vigorous above and below old dam.

Photo to Left: Ramshaw Meadow: Area of the stream just below the beaver dam. PFC gives a "No" rating if beaver dams are not stable AND active. The riparian area below the dam is recovering well and majority of the area above and below the dam is stable and responding well to the disturbance.

Lower Ramshaw within exclosure:

Lower Ramshaw Meadow within exclosure			
Meadow Type	**Vegetation Condition**	**Watershed Rating**	**PFC Rating**
Wet Meadow	Excellent (2nd tier)	Fully Functional	FAR with upward trend

The **Amendment 6** rating for this section is Fully Functional, rating a level 4 for all six parameters.

- **Organic Layer:** There was at least a 2 inch sod layer throughout the floodplain, and it was evident that this was a more recent development.
- **Bare Ground:** There was some rodent activity that created bare ground, but it was limited and scattered throughout the key area.
- **Rills/Gullies, Compaction, Hummocks, Headcuts:** None of these features were noted within the assessment area.

The old beaver dam was stable and well vegetated. Lateral movement of the stream was active in 2010 due to high flow run-off with a high amount of bed-load (sand) in the floodplain which was trapped by the established vegetation from previous years.

Photo above: Typical example of the condition of the channel as it flows through middle Ramshaw Meadow.

Vegetation: Lower Ramshaw Meadow is a wet meadow that rated at excellent condition and fell in the second highest tier of Amendment 6. *Artemisia tridentata* surrounded the edges of the meadows, and rodent activity was present. *Carex utriculata* was the dominant species recorded. Almost 25% of total hits recorded were litter. A *Solidago* spp. was also commonly hit.

PFC: Two PFC ratings were taken along this stretch of river. Both were rated as Functioning at Risk with an Upward Trend. The limiting factor for a PFC rating was the lack of adequate riparian-wetland vegetative cover present to protect banks and dissipate energy during high flows. This was due to the many sections of the creek that flowed through the high alluvium terraces that were dominated by sagebrush vegetation. However, as discussed above, this appears to be within the expected function of this river as it increases sinuosity and carves a new location for the channel through the high alluvial deposits.

NE Ramshaw Stringer:

NE Ramshaw Stringer Meadow			
Meadow Type	**Vegetation Condition**	**Watershed Rating**	**PFC Rating**
Wet Meadow	Excellent (2nd tier)	Fully Functional	FAR upward trend

Meadow Description: The entire Ramshaw Meadow complex of approximately 883 acres includes this arm that makes up approximately one-half of that. The meadow is predominantly mapped as Alluvial Fan (MU 7) and Wet Drainageways (MU 2).

Watershed Rating: A Riparian Key Area assessment was conducted for this reach. All components of Amendment 6 Watershed rated as Level 4 except for Hummocks, which rated as Level 3.

Photo above: Overview of the middle section of NE Ramshaw Stringer.

- **Organic Layer:** Up to 2.5 inches of sod was measured throughout the Key Area. The soil was dark and mixed with course sand. The soil was wet throughout the Key Area except for a few areas along the margin.
- **Hummocks:** Hummocks were observed within the thick *Carex* species community. There was no change in the composition of the vegetation community where hummocks were present. The vegetation throughout was a mono-culture of Carex utriculata (photo, upper right). Water flowed around the high points, with obvious rodent trailing around the "hummocks". There was some discussion if these hummocks were a natural feature in this very-wet meadow. The hummocks occur sporadically through the saturated areas, and it is difficult to tell if they are static.
- **Rills/Gullies:** One gully was observed which may be an old overflow channel as it was well vegetated and stable.
- **Compaction:** No evidence of compaction was noted throughout the Key Area. There were some small, dry areas near the stream channel that did exhibit compaction, up to 3 inches below the surface with a minimal sod layer with mesic soils. Vegetation vigor is limited in the scattered, small dry areas. However,

Photo above: The upper extent of recent headcut migration within NE Ramshaw Stringer Meadow.

these areas compose about 500 square feet over the 130 acres of Key Area.

- **Bare Ground:** Bare ground was a function of the heavy rodent activity, easy to observe early in the spring.
- **Headcuts:** Two headcuts were observed within the upper reaches of the channel, but they were well vegetated and stable.

Noted at the lower end of the Key Area is a headcut approximately one foot in height which had moved upstream about 15 feet in the 2010 high-flow event (photo, above). This headcut occurred through what would be considered as a highly stable vegetation community, however, there was extensive rodent activity observed along the margin of the headcut where it originated. This headcut essentially puts the entire meadow at risk of downcutting and lowering the base level of the meadow. The headcut should be treated or at least fenced off if cattle are to resume grazing. Another extensive headcut occurs up a side channel (photo,below), again threatening the meadow function if it is able to continue migrating upward.

Photo above: Wide headcut that is migrating into the side meadow within NE Ramshaw Meadow.

This meadow has been rested from grazing for approximately 20 years. An exclosure was built in the late 1980's to rest the area from the impacts of grazing. Heavy thatch has built up in the *Carex* dominated portions of the meadow, causing a decrease in vigor and plant re-establishment within the meadow.

Photo above: Thatch build-up within NE Ramshaw Meadow.

Vegetation: Northeast Ramshaw Meadow is a wet meadow that rated at excellent condition and fell in the second highest tier of Amendment 6. Rodent activity was present. Litter accounted for almost one-third of total hits. Late-seral *Carex* species, including *C. utriculata* and *C. simulata*, were the dominant species recorded.

Proper Functioning Condition: One PFC reach was rated through this meadow. All parameters were rated as "yes", except for the question, "System is vertically stable". This is due to the two headcuts observed and illustrated above. However, throughout the entire reach, the riparian area was widening, the channel was coming up to grade, the channel was moving towards a more "overland flow" characteristic, sinuosity was evident (see photo – the line of vegetation gives away the sinuous nature of the channel), and rodent activity did not appear to impact the stability of the streambanks as evidenced by the vegetative stability throughout most of the area. However, the two headcuts put the entire system at risk due to extensive rodent activity within the vegetation at the apex of the headcut, creating a very unstable condition. For this reason the rating of Functioning At Risk with an Upward Trend was given for the stream channel.

Photo above: Overview of NE Ramshaw Meadow taken from the upper end of the meadow towards the lower end and the confluence with the South Fork Kern River.

Lewis Stringer

Lewis Stringer Meadow			
Meadow Type	**Vegetation Condition**	**Watershed Rating**	**PFC Rating**
Wet Meadow	Good (3rd tier)	Fully Functional	PFC

Lewis Stringer is a tributary channel that flows into the South Fork of the Kern River (SFKR) near the upper end of Templeton Meadow, the lower reach which is included as part of the greater Templeton Meadow complex, encompassing about 1290 acres. Lewis Stringer is estimated to be about 50 acres. The uppermost part is mapped as Sloped Stringer Meadow (MU 4), but the bulk of it is mapped as Floodplain/Terrace with Willow (MU 12).

Amendment 6: One Amendment 6 assessment was completed in the meadow adjacent to the confluence with the SFKR, which rated as Fully Functional.

- **Organic Layer:** 2 to 2 ½ inches of sod layer with organic soils was measured throughout the key area.
- **Hummocks, Rills/Gullies, Bare Ground:** No hummocks, rills, bare ground (except for rodent activity) or headcuts were observed within the meadow.
- **Compaction:** There was some compaction of soil along the streambanks most likely due to recreation horse and angler traffic, but it was confined to those areas, and overall there was no compaction observed in the meadow.

Photo above: Meadow condition within the area of Lewis Stringer.

Vegetation: Lewis Stringer is a wet meadow that rated at good condition and fell in the third tier of Amendment 6 because of a lack of desirable plant species. Vegetation in this key area was a mix of early- and mid-seral forbs and late-seral *Carex* species. There was rodent activity present. Litter and bare soil comprised about 15% each of total hits.

PFC: PFC was completed for three reaches along Lewis Stringer, starting at the upper channel and continuing to the area of the Key Area. The channel at the upper end falls in to the Rosgen "B" type channel, which exhibits a higher gradient and does not exhibit typical meadow characteristics. Except for the abundant rodent activity that was noticed, the channel was observed to be stable with vigorous, adequate riparian vegetation with a diversity of species present. Channel characteristics were in sync with the surrounding landscape, exhibiting an inundated floodplain, a widening riparian area, a vertically stable system and sinuosity, width/depth ratios and gradient that is in balance with the landscape setting. All three reaches were rated at Proper Functioning Condition.

Photo above: Lewis Stringer within the upper reach.

Templeton Meadow:

Templeton Meadow			
Meadow Type	**Vegetation Condition**	**Watershed Rating**	**PFC Rating**
Wet meadow	Good (3rd tier)	Fully Functional	Reach A: Far upward trend Reach B: FAR upward trend Reach C: PFC
Upland Vegetation		At Risk	
Dry Meadow	Excellent (1st tier)		

Templeton Meadow is a portion of the Templeton Meadow Complex, the entire area of which is approximately 1290 acres. It contains ecological types ranging from wet ponded areas to the drier alluvial fans and colluvial aprons. The southernmost half of the meadow is dominated by Alluvial Fan (MU 7) features and smaller sloping meadows (MU 3, MU 6, and MU12).

Amendment 6: Two different Amendment 6 Assessments were completed for Templeton Meadow – one for Riparian and one for Upland conditions. For the Riparian Assessment, the overall rating was Fully Functional, all parameters rated as Level 4 except for hummocks and Compaction, which rated as a 3.

Photo above: Overview of Templeton Meadow, showing developing floodplain and the characteristic high, alluvial banks with typical upland vegetation.

- **Organic Layer:** Overall, there was a one to two inch sod layer over a heavy clay base. Soil was looser in areas where there was recent extensive rodent activity.
- **Hummocks:** Hummocks were present in wetter areas, but there was no vegetation change along the gradient of the mounds. The hummocks did not consistently occur throughout the area, and were in limited areas.
- **Compaction:** There was some evidence of slight compaction throughout the Key Area. There was some limited plating, but it did not affect the rooting depth. Compaction appeared to be reducing due to the root action. There was more clay observed in this soil type compared to soils observed in Strawberry, Ramshaw, Schaeffer, so it is more susceptible to compaction.
- **Rills/Gullies, Bare Ground:** No rills, gullies, bare ground due to disturbance were observed.
- **Headcuts:** There were some small headcuts observed in the meadow, but they were vegetated and stable.

Vegetation: The part of Templeton Meadow that is a wet meadow rated at good condition and fell in the third tier of Amendment 6 because of a lack of desirable plant species. Late-seral *Carex* species

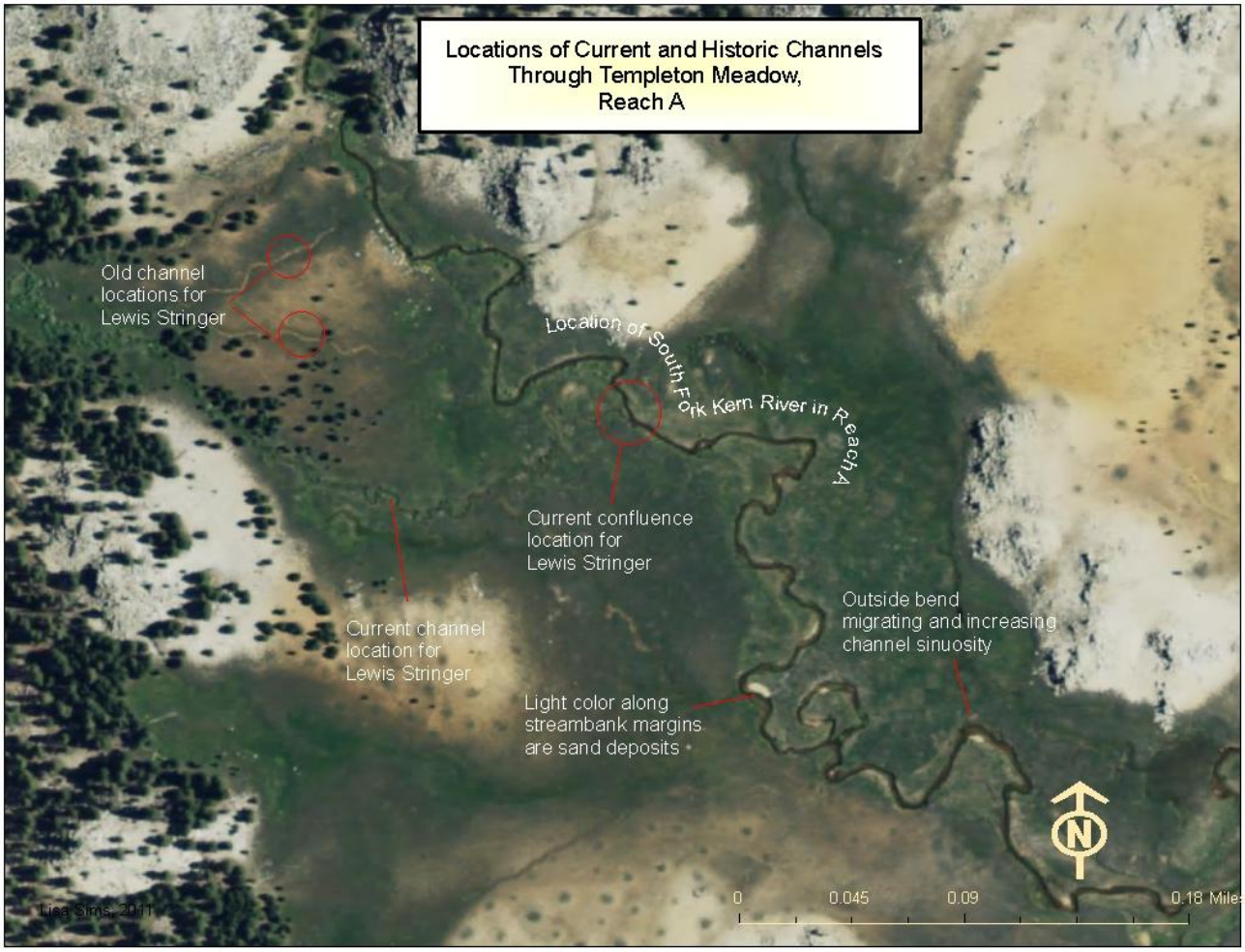
were still the most common species recorded. Litter comprised about 25% of all hits, and bare soil hits were minimal.
The Upland Assessment rated all parameters as Level 4 except for Surface "A" Horizon and Compaction, which was given a Level 2 (Degraded). The overall rating for this meadow is At Risk. Where present, "A" horizon is approximately one inch in depth. Extensive rodent activity was evident and the soil type was a hydroscopic-type clay soils (indicating a high clay content) with very limited vegetation. Some compaction was observed in the clay soils. This soil type was limited to an area just south of the channel and seemed to be site-specific. The soil had an alkaline characteristic, which is rated differently than organic layers due to the natural low productivity of this type of soil.

Vegetation: The part of **Templeton Meadow** that is a dry meadow rated at excellent condition and fell in the highest tier of the Sagebrush/bunchgrass matrix in Amendment 6. *Carex praegracilis* and *Artemisia tridentata* were the most common species recorded. Litter comprised about 40% of all hits.

Photo above: An example of the dynamic nature of Templeton Meadow through Reach B. Displayed here are examples of bank-building, lateral movement into the alluvial terrace, establishment of late seral vegetation and deposition on new floodplains.

Proper Functioning Condition: Three PFC Assessments were completed for the stream through Templeton Meadow.
Reach A includes the area from Lewis Stringer downstream to the top of the exclosure. There is good sinuosity and width to depth ratio and the riparian area is widening as exhibited by the expansion of riparian vegetation and floodplain area. This area of the stream is relatively stable within the floodplain, but still exhibits limited lateral movement of the outside bends along the sandy alluvial terraces. This occurs where stabilizing plants cannot establish in the dry, sandy outside meander bends. Because of the presence of these terraces, the PFC rating of "No" was given to the question of "adequate riparian

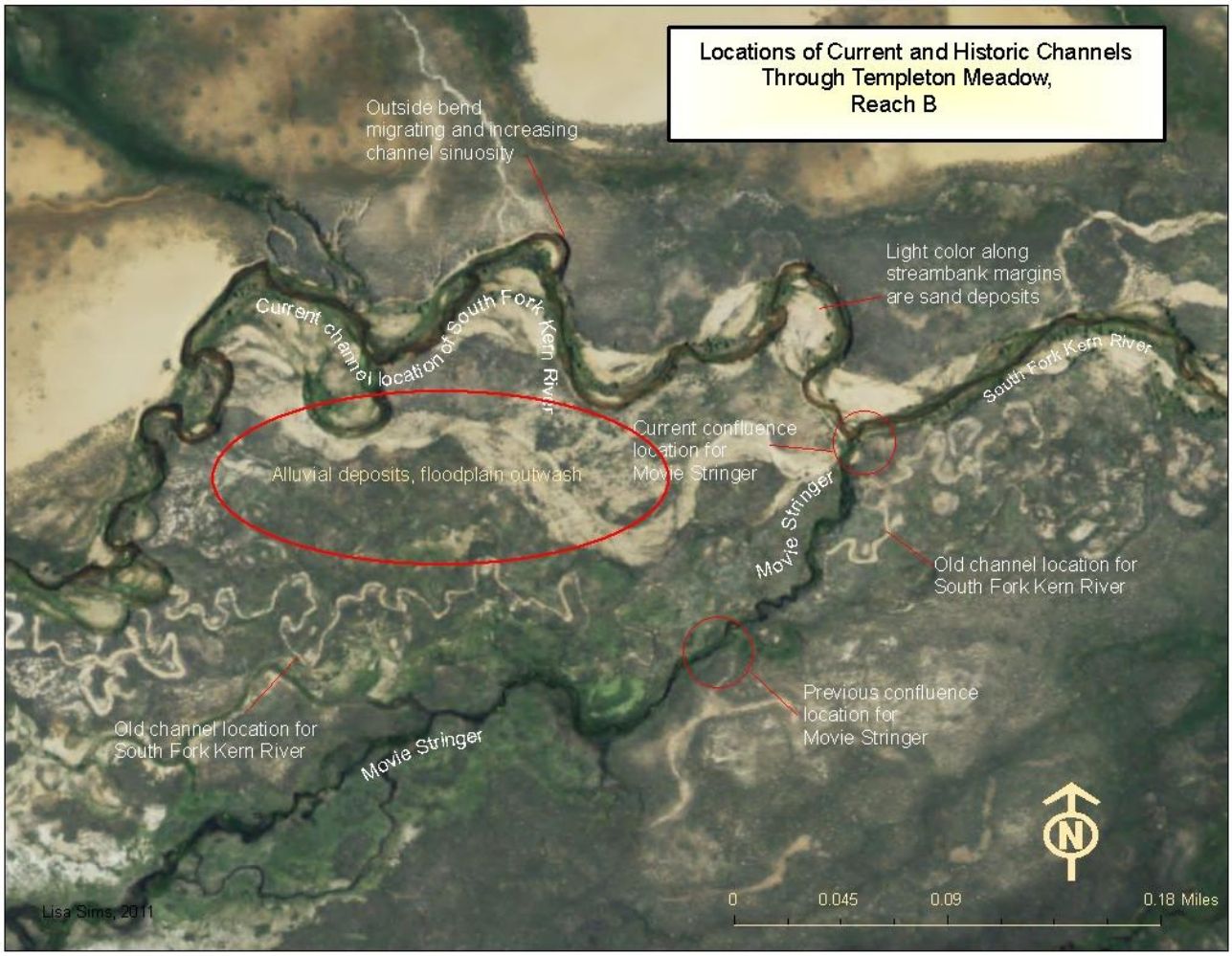
vegetative cover present to protect streambanks". Also, because of the sandy deposits along the streambanks, the reach was not considered to be in balance with the water and sediment that is being supplied by the watershed. For these two reasons, this reach was rated as FAR with an upward trend.



Above: Note the distinct difference of the channel between the condition of Reach A and Reach B (figure, below). This reach of the river is much less dynamic as evidenced by the presence of more green vegetation along the streambanks, and less sandy areas along the banks, which is very obvious in Reach B.

Reach B includes the stretch of stream from the upstream end of the exclosure to about 150 yards downstream of the Mulkey Creek confluence. This area is influenced by an overlay of sandy alluvium that was deposited on top of the floodplain at an unknown time. The stream system has cut through the sand deposit at an effort to regain sinuosity in the system. This section of stream is extremely dynamic, with a high sediment load that is constantly deposited, eroded and re-deposited. There are many factors that have influenced this lack of stability in the system, such as excessive sediment load, historic heavy grazing, irrigation ditches and diversions, naturally occurring high-flow events, heavy snow deposits that altered channel location, etc. On the ground, it appears that the current floodplain is inundated in relatively frequent events, and that the riparian area is widening, both by a narrowing channel and by developing floodplains. However, it is obvious that the sinuosity is lacking in the system and that the channel appears too wide throughout most of the reach. From the field notes, "Area appears more incised than the reaches up and downstream of this reach. Appears that there is an 'extra' layer of sandy

deposits on top of the old terraces that the river has had to cut through". Vegetatively, there is a diverse age-class and composition of riparian vegetation, but there is not adequate vegetation cover to protect bank, especially on the tops of the sandy alluvial terraces, where riparian-type of vegetation would not be expected. Because the lateral movement of the stream continues through the alluvium every year, vegetation does not have an opportunity to establish within the outside bends. However, there is very good recruitment of riparian vegetation on the inside bends of the river, which increases floodplain area. This dynamic is a natural process of streams that leads to increased floodplain area, increased sinuosity, and decreased channel gradient which buffers the meadow against the scouring effects of high flows, or flood events. As water spreads out over the floodplain, it slows down and suspended sediment drops out and is trapped by vegetation. The deposition of sediment onto the flood plain is what builds meadows and brings new nutrients to meadow vegetation. For the PFC Assessment, it was determined that the stream is not in balance with the water and sediment being supplied by the watershed due to the abundant amount of sand that is distributed along the developing floodplains. For this reason and others mentioned above, this Reach of stream was rated as FAR with an upward trend.



Above: An example of the dynamic nature of the South Fork Kern River through Templeton Meadow. This is at the same scale as the previous aerial photo. This exhibits the area of Reach B, showing the different locations of the channel, including the different location of the confluence with Movie Stringer. Note that compared to the photo above, and to the location of the old channel, the current location of the channel is much less sinuous. The channel is in the process of increasing sinuosity as evidenced by the outside bends.

Reach C of Templeton Meadow includes the area 150 yards downstream of the confluence with Mulkey Creek to the top of the Templeton Fish Barrier. Since the construction of the barrier in the 1970's, with subsequent improvements, sediment and sand from the upper watershed and from the collapsing banks have accumulated behind the barrier. Large deposits of sand are evident along the floodplain, with thickly vegetated banks lining the stream. Abundant willows have colonized the sandy areas and banks, along with a diversity of high-seral vegetation such as *Carex nebrascensis* and *Carex utriculata*. This area was rated as PFC due to the stability that is ultimately enhanced by the elevational stabilizing effect of the 9 foot high barrier.

Photo above: The lower end of Reach C that is located just above the Templeton fish barrier.

Photo above: The upper end of Reach C through Templeton Meadow with recent deposition within the floodplains.

Movie Stringer

Movie Stringer Meadow			
Meadow Type	**Vegetation Condition**	**Watershed Rating**	**PFC Rating**
Wet Meadow	Excellent (2nd tier)	Fully functional	PFC

Meadow Description: Movie Stringer is a tributary to the South Fork Kern River within Templeton Meadow, downstream of the confluence of Lewis Stringer. Movie Stringer is part of the Templeton Meadow Complex which is about 1290 acres; the riparian component of the meadow encompasses approximately 40 acres. It is an inclusion in a larger area mapped as Alluvial Fans and Toeslopes (MU 7). A unique feature of this meadow is the alkali flats that occur at the lower portion of the meadow (mapped as an Alkali Flat (MU 8) and Moderately Alkaline Terrace (MU 15). The barren and sparsely vegetated alkali areas show evidence of compaction.

Photo above: Vigorous riparian vegetation which is characteristic of Movie Stringer meadow.

Photo above: A unique characteristic of Movie Stringer meadow, the alkali flat.

Amendment 6 Watershed: An Amendment 6 Riparian Assessment was conducted for Movie Stringer. All parameters rated at a Level 4, except for compaction, which was rated as a 3 trending to a 4.

- **Organic Layer:** Sod thickness ranged from 1 to 3.5 inches, with thicker sod observed in the saturated soils near the streambank. There was a continuous cover of soil, which was very dark, organic, rich and deep.
- **Hummocks, Headcuts, Bare Soil:** No headcuts or hummocks or bare ground was observed, and minimal gopher activity was observed compared to other meadows.
- **Rills/Gullies:** A few gullies were observed, but they were well vegetated and stable. There was one "raw" gully, but it occurred for only 50 feet, was in a flat location, and was well-vegetated at either end. This may be an old irrigation ditch that is recovering.
- **Compaction:** Soils were slightly compacted to 2 inches under the sod layer, with minor platyness and not affecting rooting depth. Soil type in this area is a heavy, dark organic clay type, which is more susceptible to compaction, and may well have some influence from the alkali soil type that is within this meadow.

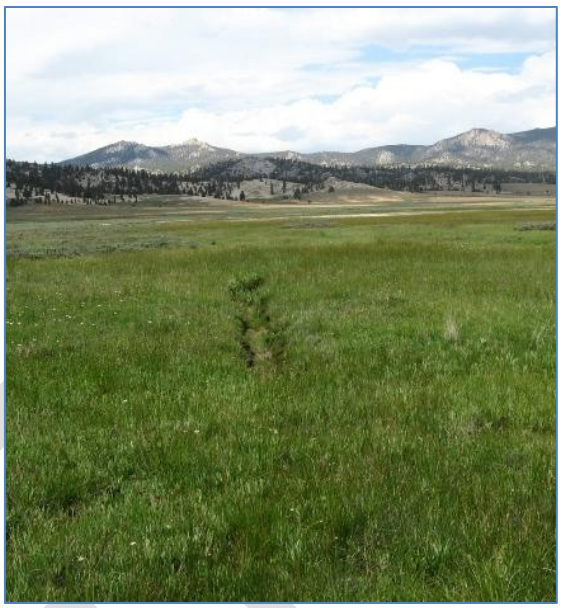


Photo above: Gully observed within Movie Stringer meadow which could be an old irrigation ditch.

Vegetation: The vegetation for this wet meadow rated at excellent condition and fell in the second highest tier. Late-seral *Carex* species accounted for most of the vegetation hits.

Proper Functioning Condition: The stream through the Key Area was divided into two PFC assessments. Both reaches are at PFC. This channel displays a widening of the riparian area, narrowing of the channel, increasing sinuosity and a vigorous and diverse, late seral vegetation composition.

Photos above and below: Two locations within Movie Stringer meadow both exhibiting vigorous vegetation and *Carex* dominated communities.

Strawberry Meadow

Strawberry Meadow			
Meadow Type	**Vegetation Condition**	**Watershed Rating**	**PFC Rating**
Wet Meadow	Good (3rd tier)	Fully Functional	2 reaches at PFC 2 reaches FAR
Upland –dry meadow	Excellent (2nd tier)	At Risk	-

This meadow is approximately 175 acres (including Fat Cow and most of the stringer between Strawberry and Brown). It is mapped as a Sloping Mixed Meadow (MU 6), which contains several intricately intermingled ecological types, however it is sloped less than most meadows within this map unit. The desired species of sedges and grasses occur on the streambanks and floodplains. There are abundant willows throughout the floodplain which have emerged since rest of the meadow was initiated in 2001.

Amendment 6 Wet Meadow: The riparian area was rated as Fully Functional with all parameters receiving a level 4.

- **Organic Layer:** The sod layer ranged from 2 ½ inches to 6 inches of organic soil with a consistent gravel layer underneath.
- No **hummocks, rills, gullies, compaction** or **headcuts** were observed, and **bare ground** was due to abundant gopher activity.

Vegetation: The part of Strawberry Meadow that is a wet meadow rated at good condition and fell in the third highest tier of Amendment 6 because of a lack of desirable plant species. Litter accounted for about one-third of total hits recorded. *Carex* species and *Trifolium longipes* were the most common species recorded.

Photo above: View of the upland vegetation within Strawberry Meadow.

Amendment 6 Upland: The upland Amendment-6 rating was rated as At Risk. Mass soil movement, Surface litter, Flow Patterns, Pedestaling, Compaction and Headcuts all rated as Level 4, with Organic Layer and Bare Ground rating as Level 3. Rills and Gullies were rated as Level 2.

- **Organic Layer:** The organic soil layer thickness was measured at 1 inch of organic soil.
- **Pedestaling, Mass soil movement, Compaction, Flow Patterns, Headcuts:** None observed.

- **Bare Ground:** Bare ground was rated as a level 3 due to a higher rate of bare soil, but predominately due to rodent activity.
- **Rills/Gullies:** There were a few noted rills and gullies from upland flows that contribute sediment to the lower areas. There were several areas of rills in dendridic flow patterns occurring in steep areas which had decreased the potential for vegetation establishment, resulting in a rating of Level 2.

Vegetation: The part of Strawberry Meadow that is a dry meadow rated at excellent condition and fell in the second highest tier of the Sagebrush/bunchgrass matrix in Amendment 6. Vegetation recorded were mainly a mix of early- and mid-seral forbs along with *Artemisia tridentata* and *Muhlenbergia richardsonis*. Litter comprised about one-third of all hits, and bare soil made up about 25% of all hits.

Photo above: Strawberry Creek in lower reach.

Proper Functioning Condition: Strawberry Creek was assessed for Proper Functioning Condition in three different reaches. Starting from the confluence of the South Fork of the Kern River, the lower portion of the creek was rated as Functioning At Risk with an upward trend as the floodplain did not appear to be inundated in relatively frequent events. There was limited floodplain development within the incised channel, which drove the rating to FAR [Note: I believe that this section of stream is actually PFC but was not evident at the time of the high flows]. Some lateral movement of the channel was observed from the 2010 event, and lateral movement appeared to be exacerbated by the abundant rodent activity along the streambanks which reduced the vigor, and sometimes the species composition, of the riparian community. The two reaches in the central portion of the stream were rated as Proper Functioning Condition with a channel that is increasing sinuosity and displays abundant willow recruitment. The channel at the upper section of the meadow has an inconsistent flow, but it was evident that the floodplain was accessed. The upper channel has limited soil development which is expressed by the lower incidence of high seral plant species. This section was rated as FAR with an unapparent trend.

Photo above: Strawberry Creek in central section of meadow.

Photo below: Section of stream channel in the upper reach of Strawberry Meadow.

Schaeffer Meadow

Schaeffer Meadow			
Meadow Type	**Vegetation Condition**	**Watershed Rating**	**PFC Rating**
Moist Meadow	Excellent (2nd tier)	Degraded	FAR downward trend

This meadow is approximately 59 acres. It is mapped as a Sloping Mixed Meadow (MU 6), which contains several intricately intermingled ecological types, ranging from wet drainageway (EUB) and hanging meadow(EUC) types to drier Terrace*Haplocryolls (EUP). Schaeffer Meadow is a headwater stream fed primarily by springs, but is influenced substantially by spring run-off from snow pack in the higher elevation areas. The un-named creek in Schaeffer Meadow (not to be confused with Schaeffer Stringer) flows directly into the South Fork of the Kern River at a point below the Strawberry Meadow complex.

Photo above: Example of an active headcut within Schaeffer Meadow.

Amendment 6: Schaeffer Meadow rated as Degraded due to the rating for Headcuts as Level 1. All other parameters rated as Level 4, except for Rills/Gullies, which rated as Level 3.

- **Organic Layer:** Approximately 2 ½ inches of sod covers majority of the key area. Abundant rodent activity was noted and aids in overturning and mixing the soil.
- **Hummocks, Compaction, Bare Ground:** No hummocks, compaction or bare ground was observed, although abundant rodent turn-over was observed. This also contributes to some instability and mass movement of the soil within the riparian areas.

Photo above: Overview of the meadow area within Schaeffer Meadow.

- **Rills/Gullies:** There was no evidence of rills or gullies within the upstream end of the meadow, but there were large and partially vegetated gullies entering the channel along the middle section of the reach, giving a rating of Level 3.
- **Headcuts:** There were a dozen or more active headcuts throughout the central part of the meadow. There was noticeable sagebrush movement into the former moist meadow at some locations. The channel appeared stable just below the headcuts, but

when observing a little further down the stream channel, more active headcuts were observed.

Vegetation: The vegetation for this moist meadow rated at excellent and fell within the second highest tier of Amendment 6. Vegetation in this key area was mostly a mix of different mid-seral forb and grass-like species.

Proper Functioning Condition: Three PFC ratings were conducted for Schaeffer Creek that incorporated the Key Area. All three reaches were rated as FAR with a downward trend. The trend rating was driven primarily by the lack of floodplain and channel characteristics adequate to dissipate energy, the vertical instability of the system, the lack of riparian-wetland vegetation to protect banks and dissipate energy and that the floodplain is not inundated in relatively frequent events. For most of the ratings, it was noted that desirable riparian vegetation is establishing, but not enough to prevent the excessive headcut activity which put the rating at a downward trend.

Photo above: Another example of headcuts within the meadow.

Long Stringer Meadow

Long Stringer Meadow			
Meadow Type	**Vegetation Condition**	**Watershed Rating**	**PFC Rating**
Wet Meadow	Excellent (1st tier)	Fully Functional	No channel

Long Stringer is approximately 66 acres and is mapped as a Sloped Riparian Stringer. Vegetation is dense, with a high occurrence of desirable sedges and willows. Several small, but stable and inactive headcuts in the mid to upper part of the meadow were observed, and hummocks occurred in several isolated areas. The sod layer was measured at 6 inches, with no compaction observed, bare ground or rills/gullies observed. Unfortunately, the data sheet was lost after it was completed for this meadow, but all categories rated at level 4, except for Hummocks, which would rate as a Level 3, resulting in a Fully Functional rating.

Photo above: Overview of Long Stringer Meadow, view of interface of wet meadow and moist meadow communities.

Proper Functioning Condition: There was no continuous channel or perennial surface water, so Proper Functioning Condition assessments were not completed for Long Stringer meadow. However, in one location where there was a segment of a channel with surface water, and one large 13 inch rainbow/golden trout was observed, indicating that connectivity with the main channel had occurred in the past.

Vegetation: Long Stringer Meadow is a wet meadow that rated at excellent condition and fell in the highest tier of Amendment 6. Willows of different age classes were visually abundant. Dominant vegetation recorded was late-seral *Carex* species. About 25% of total hits recorded were litter.

Photo above: A section of the discontinuous channel through Long Stringer meadow.

Photo above: Long Stringer showing abundant willow recruitment through the riparian area.

Gomez Meadow

Gomez Meadow			
Meadow Type	**Vegetation Condition**	**Watershed Rating**	**PFC Rating**
Wet meadow	Good (3rd tier)	Fully functional	PFC

Gomez Meadow is located just east of the Sierra crest and is approximately 47 acres in size. This meadow is mapped mostly as wet meadow ecological types: Wet and Moist Drainageways (MU2 and MU 19), Hanging Meadows (MU 3), and Sloped Stringer Meadows (MU 4). An abundant amount of Pacific chorus frogs were observed throughout the meadows and stringers.

Watershed: Amendment 6 rating for watershed condition rated all parameters at Level 4, except for Hummocks, which rated as a Level 2 to 4, depending on the site.

- **Organic Layer:** The organic layer above the soil layer was about 2 inches thick in the wet areas, and about one inch thick in the perimeter meadow area. The "A" horizon ranged from 6 to 8 inches throughout the meadow, with some organic horizons and root masses up to 10 inches thick.
- **Compaction, Bare Ground, Rills/Gullies, Headcuts:** None of these features were observed within the meadow.
- **Hummocks:** Hummocks were noted around the perimeter of the wet meadow where the wet and moist types interfaced. However, no other hummocks were noted throughout the assessment area, which is why there are two ratings. It was not easy to discern if the hummocks were a natural feature, or caused by historic grazing. There was no vegetation change along the height of the hummocks.

Vegetation: Gomez Meadow is a wet meadow that rated at good condition and fell in the third tier of Amendment 6 because of a lack of desirable plant species. However, the transect avoided a large monoculture of *Carex utriculata* that had standing water. The transect was placed along the edge of the meadow to encompass more species; *C. utriculata* was still the dominant species in the transect. About 25% of total hits recorded were litter.

Left: Gomez Meadow: Noticeable vegetation demarcation zone where alluvium (dark green) soils intrude into the wetter meadow soils (golden area). The wet soils supported CAUT, where as the vegetation within the more recent alluvium intrusion is comprised of mid-seral species.

Photo above: Close-up of hummocked area around perimeter of Gomez meadow.

Proper Functioning Condition: Three PFC assessments were completed for the stringer streams flowing into the main meadow. Reaches B and C were difficult to find as the system had reverted to an "overland" flow characteristic. Reach C was heavily vegetated throughout the meadow, including in areas where old headcut structures had been installed. The structures are currently abandoned by the channel with abundant *Carex nebrascensis* and *C.utriculata* growing throughout the area. Reach C was rated at PFC due to the healthy riparian vegetation throughout the meadow and ability to dissipate any flows that would come out of the channel. Reach B is a steep channel, and was dry at the time of assessment and still exhibited lower-rated seral species. It was rated as FAR with an upward trend.

Photo above: Dry channel of Reach B of the Gomez Meadow complex.

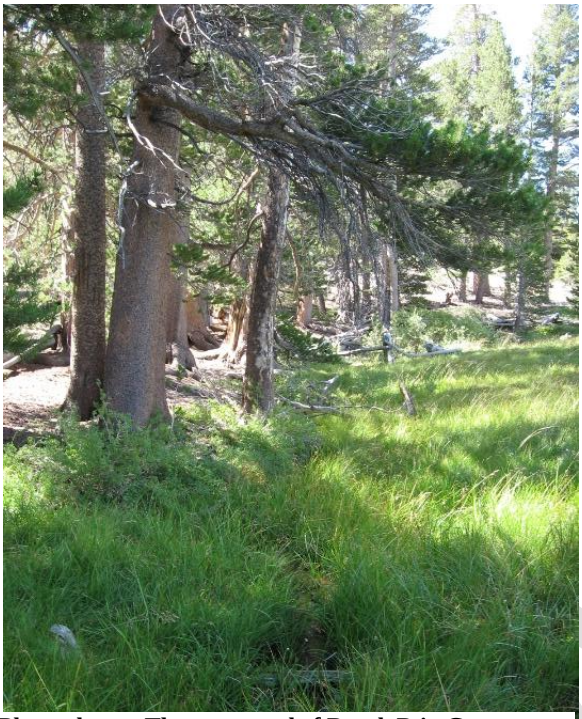


Photo above: The upper end of Reach D in Gomez Meadow.

Reach " D" consisted of a spring-fed channel that had evidence of consistent, perennial flow. Reach D exhibited extensive recovery as evidenced by stable banks and a narrower channel than what was observed in 1997. It was rated at PFC. There were abundant willow, and a small aspen (*populus tremuloides*) stand in the south portion of the meadow.

Photo above: Reach D in Gomez Meadow, showing stabilizing vegetation and willow recruitment along channel.

Big Dry Meadow –

Big Dry Meadow			
Meadow Type	**Vegetation Condition**	**Watershed Rating**	**PFC Rating**
Wet Meadow	Good (3rd tier)	Fully Functional	No Channel

Big Dry meadow is approximately 166 acres. The main portion of the meadow is mapped as Moderately Alkaline (MU 15) in the center surrounded by Alluvial Fan (MU 7) at the perimeter. The eastern arm is mapped as Moist Drainageway (MU 19) which has some seeps/spring inclusions in it. Amendment 6 was completed for the eastern arm, and no PFC was completed because of the lack of a consistent stream channel.

Photo above: Looking down from the eastern arm of Big Dry Meadow.

Watershed: All parameters for Amendment 6 were rated at Level 4, except for hummocks and bare ground, which both rated as a Level 3.

- **Organic Layer:** There was a 2 – 4 inch layer of sod throughout the east arm. The soils were mostly a fine silt/clay below the organic layer, with a sandy lower layer. Within the area of the old "headcut", there was 8 to 10 inches of sod noted.
- **Hummocks:** Hummocks were noted only in a few localized areas on the peripheral of the interface of the wet and moist areas, with no vegetation change on the tops.
- **Compaction, Rills/Gullies:** No rills, gullies, or compaction was observed.
- **Bare Ground:** There was scattered and abundant rodent activity throughout the meadow.
- **Headcuts:** Two old, treated and stable headcuts were observed with abundant rodent activity noted at the apex, but they appeared stable. A weasel was observed at the head of one of the headcuts, whose favorite food is, of course, little burrowing rodents.

Photo above: Stabilized headcut in the eastern arm of Big Dry Meadow.

Vegetation: Big Dry Meadow is a wet meadow that rated at good condition and fell in the third tier of Amendment 6 because of a lack of desirable plant species. Despite this, vegetation within the eastern arm was vigorous and thick and was represented primarily by *Carex nebrascensis* and *Carex utriculata*. *Carex* species were still the most abundant species recorded. Rodent activity appeared to account for some of the 20 hits of bare ground recorded (less than one-third).

Left: Treated headcut in Big Dry Meadow that has stabilized but exhibits abundant rodent activity at the exposed "rim" of the headcut.

Left: Looking up the new developed floodplain within the east arm of Big Dry Meadow. Treated portions of headcuts are located near the white rock in the mid-photo.

Dry Creek Meadow:

Upper Dry Creek Meadow			
Meadow Type	**Vegetation Condition**	**Watershed Rating**	**PFC Rating**
Wet Meadow	Excellent (2nd tier)	Fully Functional	PFC

Dry Creek Meadow: Dry Creek Meadow is about 188 acres in size. It is a narrow meadow mapped with Moist and Wet Drainageways (MU19 and MU2) down the center of the meadow and Alluvial Fan (MU7) on the sides of the meadow. Dry Creek is recovering from historic gullying by establishing a wide floodplain. This narrow meadow was divided into two reaches, each assessed for Amendment 6 and PFC.

Watershed: The watershed condition rating was rated as fully functional all parameters at Level 4. It appeared that soil building was active throughout the meadow, and that "abundant substrate was available for aggradation throughout area" Overland flow paths were noted around the robust *Carex* sp. plants, but there is no defined channel in meadow, and water flow paths do not appear to be degrading the organic surface layer component of the meadow. There were some open areas in the very wet meadow, and they were aggrading with fine sediment and organic materials. They are rapidly filling in with *Carex utriculata*. There are some open areas that are recolonizing with *Torryeachloa*, indicating that this area was recently inundated with water.

Photo above: Overview of the upper reach of Dry Creek Meadow showing vigorous growth of *Carex utriculata* along the streambanks and within the floodplain.

- **Organic Layer:** A range of 3 to 6 inches of organic soil was measured throughout the meadow.
- **Hummocks, Compaction, Rills/Gullies, Bare Ground, Headcuts:** None of these features were observed within the meadow.

Vegetation: Dry Creek is a wet meadow that rated at excellent condition and fell in the second highest tier of Amendment 6. *Carex nebrascensis* and *C. utriculata* dominated the meadow. *Torreyochloa pallida* and *Juncus orthophyllus* were also common species.

Proper Functioning Condition: The upper reach was rated at PFC, however, the channel was discontinuous throughout the reach. Where the channel was evident, it was stable and dominated by desirable sedge species along the banks. Rapid aggradation was evident, indicating a vigorous floodplain that is trapping the input of sand from the uplands.

Lower Dry Creek

Lower Dry Creek Meadow			
Meadow Type	**Vegetation Condition**	**Watershed Rating**	**PFC Rating**
Wet meadow	Good (3rd tier)	Fully Functional	PFC

Watershed: All parameters for Amendment 6 were rated as Level 4, fully functional, except for bare ground due to disturbance, which was rated as a 3 trending to a Level 4.

- **Organic Layer:** Organic soil thickness was measured at 2 inches throughout, covering a deep sandy layer.
- **Hummocks:** A few scattered areas of hummocks, which appeared to be enhanced by rodent activity, were observed and occurred within mid-seral communities and did not appear to affect hydrologic function.
- **Compaction, Rills/Gullies:** These features were not observed within the assessment area.
- **Bare Ground:** Some scattered areas of bare soil that exhibited low soil productivity were observed and were generally perched above the floodplain within the meadow. However, these areas were colonizing with early-seral plants.
- **Headcuts:** One small headcut was observed within the channel, but it appears stable and did not migrate during the high run-off event of 2010.

Photo above: Overview of the lower section of Dry Creek Meadow. There was a higher incidence of early and mid-seral plants, mixed with a late seral *Carex* community.

Vegetation: Lower Dry Creek is a wet meadow that rated at good condition and fell in the third tier of Amendment 6 because of a lack of desirable plant species. Vegetation in this key area was a mix of early- and mid-seral forbs and late-seral *Carex* species. Litter and bare soil each comprised about 15% of total hits.

Proper Functioning Condition: The lower watershed was rated at PFC, with all applicable parameters rated as "yes". The channel is very stable with no lateral movement or point bars. Compared to the upper reach, there is much reduced input of sand and sediment into the channel. The vigorous nature of the vegetation maintains a consistent connection to the floodplain.

Grouse Meadow –

Grouse Meadow			
Meadow Type	**Vegetation Condition**	**Watershed Rating**	**PFC Rating**
Moist Meadow	Excellent (1st)	Fully Functional	PFC

Grouse Meadow is slightly more than 30 acres. The main part of the meadow is mapped as an Older Terrace with Remnant Floodplain Features (MU 9), and the southwest arm is mapped as a Hanging Meadow (MU 3). The main part of the meadow has a historically incised gully in which the channel is developing a functional floodplain. Amendment 6 was completed on the southwest arm.

Photo above: Overview of the southwest arm of Grouse Meadow.

Watershed: All Amendment 6 parameters rated out at Level 4, except for hummocks, which rated as Level 3 due to hummocks around meadow edges that exhibited slight vegetation change on top of the humps (*Deschampsia*).

- **Organic Layer:** A 4 to 6 inch sod layer occurred throughout the middle of the meadow, and a 2-3 inch sod layer occurred near the perimeter of the meadow. There was a higher composition of clay soils around the perimeter of the meadow, compared to a more sandy composition in the middle of the meadow.
- **Compaction, Rills/Gullies, Bare Ground, Headcuts:** None of these features were observed within the meadow.
- **Hummocks:** Some limited areas of hummocks observed around the perimeter of the meadow, with slight vegetation change on top of the humps. No compaction was detected at the bottom of the hummocks.

Vegetation: The vegetation within the southwest arm was rated as a moist meadow that rated at excellent condition and fell in the highest tier of Amendment 6. There was rodent activity present, but this did not appear to account for most of the bare ground recorded. Vegetation hits were mostly a mix of *Carex nebrascensis*, *Carex utriculata*, *Juncus orthophyllus*, *Muhlenbergia*, and mid-seral forbs.

Proper Functioning Condition: PFC was conducted in the northeast channel for two reaches and was observed to have a vigorous floodplain with abundant *Carex* and willow species throughout the floodplain. Both reaches were vertically stable. However, there are a few headcuts that were active at the very bottom below the identified reach of the channel, which potentially could threaten the upper

reaches of the channel. Both reaches were rated at PFC, with the notation of the active headcuts just below the rated reach.

Photo above: Incised channel of Grouse Stringer, showing widening floodplain. In center of photo is an intermittent channel that pre-historically may have been connected to a more productive spring.

Photo left: Lower reach of Grouse Stringer. This was rated at PFC. *Deschampsia* sp. occurred throughout the meadow but not on streambanks.

Brown Meadow

Lower Brown Meadow			
Meadow Type	**Vegetation Condition**	**Watershed Rating**	**PFC Rating**
Wet meadow	Good (3rd tier)	At Risk	FAR

Brown Meadow is about 112 acres. It has areas mapped as Sloping Mixed Meadow (MU 6), Hanging Meadow (MU 3), and Wet Drainageways (MU 2). The upper ends of the tributary arms of Brown Meadow contain dense stands of willow and there are also willow stands along the creek in the lower meadow. Willows are less frequent in the central portion of the meadow. The upper end of the meadow was not assessed for either Amendment 6 or PFC.

Photo above: Brown Creek and meadow at the lower end of the system.

Watershed: For the mid- and lower portion of Brown Meadow, all parameters rated as a Level 4 for Amendment 6, except for Headcuts and Nickpoints, which rated as a Level 2 but trending towards a Level 3.

- **Organic Layer:** The organic layer near the stream channel was 4 – 2 inches thick, and there was a well-developed sod layer over a course sand layer. In the upper meadow area, away from the floodplain, there was about a 2 inch organic layer over a more clay-like soil with very vigorous *Carex* sp. vegetation layer.
- **Compaction, Hummocks, Rills/Gullies:** None of these features were observed throughout the meadow. Root depth was measured at 6 -8 inches in depth, with no platiness and no "J" configuration of the roots.
- **Bare Ground:** Some bare ground was observed due to rodent activity which encompassed about 5% of the meadow area.
- **Headcuts:** Four headcuts were observed, three which were stable and/or stabilizing, and one that migrated about 10 feet from the 2010 spring run-off event (photo below).

Vegetation: Brown Meadow is a wet meadow that rated at good condition and fell in the third tier of Amendment 6 because of a lack of desirable plant species. Despite this, sizable patches of *Carex* species and *Deschampsia* species were visually abundant, and *Carex* species were the most common plants recorded. Rodent activity appeared to contribute to about half of the bare ground recorded. Litter and bare soil each comprised about 15% of total hits.

Proper Functioning Condition: Three reaches of Brown Creek were assessed for Proper Functioning Condition, excluding the uppermost and lowermost portions of the channel. Overall, the stream channel was slightly incised in areas, but majority of the riparian area has an inundated flood plain. The riparian area is increasing in size, indicating that the incisement is aggrading. The channel is predominately stable – old headcuts define the incised channel, but are stable with abundant robust *Carex* communities. Willows were represented by a variation of younger age classes, indicating a trend for re-colonizing. Reaches C and D were rated as Functional At Risk with an upward trend – these reaches were in the upper portion of the assessed channels. Reach B was rated as Functional At Risk with trend Not Apparent due to the unstable banks that were riddled with rodent burrows.

Photo above: One of the active headcuts within Brown Meadow Creek.

Photo above: The lower section of Brown Meadow, Reach B, looking downstream.

Death Canyon Tributary Meadow:

Death Canyon Tributary Meadow			
Meadow Type	**Vegetation Condition**	**Watershed Rating**	**PFC Rating**
Wet Meadow	Excellent (2nd tier)	Fully Functional	No channel

Death Canyon Tributary Meadow is about 40 acres in size. It is mapped as a moist meadow drainageway. It is a long, broad meadow with no perennial water except at the lower end near the confluence with Death Canyon Stringer. At the lower end of the meadow, several large headcuts exist that were stable until the 2010 high flow event. Several of the headcuts moved 10 to 50 feet upstream, creating large pools in their wake in this steeper portion of the meadow. Above the headcuts the gradient levels out, and a channel is difficult to find. Several odd depression features occur within the meadow which look like big divots (some 15 feet wide by 30 feet long) taken out of the surrounding, robust vegetation. It is obvious that these features contain water in the early part of the season, but at the time of the assessment, were dry. They are stable features and well vegetated on the perimeters.
Watershed: Amendment 6 was conducted for this meadow, with four parameters rating at Level 4, and two at Level 3, (trending to Level 4) which are Rills/Gullies and Bare Ground.

- **Organic Layer:** There was a 2 – 4 inch thick organic layer over heavily rooted silty soil throughout the meadow.
- **Hummocks:** There was one 80 foot x 50 foot area of hummocks in the middle of the meadow, but it did not appear to affect hydrologic functionality, however, hummock formation could be increased with early season grazing due to the wetness of the meadow in the early season and fine textured soils.
- **Rills/Gullies:** Rills and gullies were rated at Level 3 due to the "divots", although they were stable at the time of the assessment, they could be re-activated with excessive impacts.
- **Bare Soil:** There was abundant rodent activity throughout the meadow, even in the thick *Carex* species community.
- **Compaction, Headcuts:** No compaction or headcuts were observed in the meadow.

Photo above: Small area of hummocks within Death Canyon Tributary Meadow.

Vegetation: Death Canyon Tributary Meadow is a wet meadow that rated at excellent condition and fell in the second highest tier of Amendment 6. There were large mats of *Carex* species present, and most of the bare ground observed appeared to be because of natural spaces between *Carex* plants. *Carex nebrascensis* accounting for the majority of vegetation hits recorded. About 25% of total hits recorded along the transect were litter.

Freckles Meadow:

Freckles Meadow			
Meadow Type	**Vegetation Condition**	**Watershed Rating**	**PFC Rating**
Wet Meadow	Excellent (1st tier)	Fully Functional	PFC

Freckles Meadow is about 59 acres. It is mapped primarily as an Older Terrace with Remnant Floodplain Features (MU 9), and Sloping Mixed Meadow (MU 6). Within the area of Map Unit 9 there are small inclusions of Relict Histosols (ecological type, EUJ) indicating that the current upper terrace was once a much wetter meadow. Historically incised and gullied, Freckles is currently improving and developing a widening floodplain with dense willow, especially in the less accessible gullies. The gully portion of the meadow was rated for Amendment 6 as a wet meadow. This meadow is a downcut channel with old terraces from 5-8 feet above the new floodplain.

Watershed: All parameters were rated at Level 4, except for rills and gullies, which rated as a 3.

- **Organic Layer:** There was up to 4 inches of sod overlaying up to 5 inches of organic soil with fine-sized gravel underneath, indicating a well-developed floodplain.
- **Hummocks, Compaction, Bare Ground:** None of these features were observed within the assessment area.
- **Rills/Gullies:** No rills or gullies were identified within the main meadow area, but there were numerous gullies flowing down from the terraces into the incised floodplain. Some were vegetated and some were active. These active gullies most likely contribute the sediment that is re-building the floodplain.
- **Headcuts:** Three small headcuts were observed at the lower portion of the meadow, but they appeared stable from the surrounding, deep rooted vegetation. There is no recent channel incisement within the old incised channel. The channel is more characteristic of overland flow with no defined channel.

Photo above: Freckles Meadow where two channels converge within the gully.

Vegetation: The wet meadow rated at excellent condition and fell in the highest tier of Amendment 6. The transect for this key area was placed in the gully. Willows were visually abundant, and *Carex utriculata* dominated the toe point transect.

PFC: Three reaches were assessed for channel function. All reaches had well-developed floodplains, with diverse age classes and species of high seral plants. The system was vertically stable and showed recent aggradation with abundant sedge and willow colonization. Willows were scattered throughout the channel. All three reaches were rated at Proper Functioning Condition.

Photo above: Taking a soil sample within the thick *Carex* community within Freckles Meadow floodplain.